

In the Claims:

Please amend claims 1, 2, 5, 6-12, 16-19, 21-31, 34-41 and 45-48, and please cancel claims 50, 53 and 54, as indicated below:

1. (Currently amended) A method of isolating faulty links in a loop in a network, comprising:
 - testing a link between a last device and an initiator in the loop;
 - testing the loop between the initiator and the last device; and
 - if a faulty link is identified between the initiator and the last device, ~~performing divide and conquer tests to identify a faulty loop segment and isolate the faulty link~~
 - selecting a first device located in the loop between the initiator and the last device, wherein at least one other device is located between the initiator and the first device;
 - testing the first device;
 - determining whether the faulty link lies between the initiator and the first device based on results of the testing of the first device; and
 - repeating, until the faulty link has been isolated, the steps of (a) selecting a new test device located in a portion of the loop in which the faulty link lies and (b) testing the new test device.
2. (Currently amended) The method of claim 1, further comprising, ~~repeating said testing the loop between the initiator and the last device, and said identifying the faulty loop segment, and said isolating the faulty link within the faulty loop segment until said testing the loop between the initiator and the last devices passes, until the loop between the initiator and the last device passes the testing, the steps of:~~
 - testing the loop between the initiator and the last device; and
 - isolating the faulty link.
3. (Original) The method of claim 1, further comprising identifying a faulty device.

4. (Original) The method of claim 1, wherein said testing the link between the last device and the initiator in the loop comprises performing a SCSI write buffer command and one or more SCSI read buffer commands.
5. (Currently amended) The method of claim 1, wherein said testing the loop between the initiator and the last ~~devices~~ device comprises performing one or more SCSI write buffer commands.
6. (Currently amended) A method of testing links in a network loop, comprising:
writing a test pattern to a last device in the loop and reading the test pattern from the last device in the loop one or more times;
determining whether a link between the last device and an initiator in the loop is a faulty link;
writing one or more test patterns to the last device one or more times;
~~performing divide and conquer tests to determine~~ determining whether a loop segment between the initiator and the last device includes at least one faulty link; and
isolating the at least one faulty link in the loop segment; wherein said isolating the at least one faulty link in the loop segment comprises:
selecting a first test device, the first test device located between the initiator and the last device in the loop;
writing one or more test patterns to the first test device one or more times;
if a write error is detected, isolating a faulty link in a loop segment between the initiator and the first test device; and
if a write error is not detected, isolating a faulty link in a loop segment between the first test device and the last device.
7. (Currently amended) The method of claim 6, ~~further comprising isolating the at least one faulty link in the loop segment~~ wherein said selecting the first test device comprises accessing a counter in a fibre channel device.

8. (Currently amended) The method of claim 7 6, wherein at least one test pattern of the one or more test patterns written to the first test device one or more times is a test pattern specified in a jitter specification standard ~~said isolating the at least one faulty link in the loop segment comprises:~~

~~selecting a first test device, the first test device located between the initiator and the last device in the loop;~~

~~writing one or more test patterns to the first test device one or more times;~~

~~if a write error is detected, isolating a faulty link in a loop segment between the initiator and the first test device; and~~

~~if a write error is not detected, isolating a faulty link a loop segment between the first test device and the last device.~~

9. (Currently amended) The method of claim 8 6, wherein said isolating the faulty link in the loop segment between the initiator and the first test device comprises:

a. selecting a new test device, the new test device located between the initiator and the previous test device;

b. writing one or more test patterns to the new test device one or more times;

c. if a write error is detected, selecting a new test device between the initiator and the previous test device;

d. repeating b and c until a write error is not detected;

e. if a write error is not detected, selecting a new test device by incrementing the previous test device by one;

f. writing one or more test patterns to the new test device one or more times;
and

g. repeating e and f until a write error is detected.

10. (Currently amended) The method of claim 8 6, wherein said isolating the faulty link in the segment between the first test device and the last device comprises:

h. selecting a new test device, the new test device located in a loop segment between the previous test device and the last device;

i. writing one or more test patterns to the new test device one or more times;

- j. if a write error is not detected, selecting a new test device between the previous test device and the last device;
- k. repeating b and c until a write error is detected;
- l. if a write error is detected, selecting a new test device by decrementing the previous test device by one;
- m. writing one or more test patterns to the new test device one or more times;
and
- n. repeating l and m until a write error is not detected.

11. (Currently amended) The method of claim 8 6, wherein said isolating the faulty link in the loop segment between the initiator and the first test device comprises:

- a. selecting a new test device, the new test device located halfway down a loop segment between the initiator and the previous test device;
- b. writing one or more test patterns to the new test device one or more times;
- c. if a write error is detected, selecting a new test device halfway down a loop segment between the previous test device and one of the initiator and a prior previous test device;
- d. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and the prior previous test device;
- e. repeating b, c, and d until there are less than three devices in the loop segment being tested;
- f. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- g. if a write error is not detected, rounding up one from the new test device to identify the faulty link.

12. (Currently amended) The method of claim 8 6, wherein said isolating the faulty link in the loop segment between the first test device and the last device comprises:

- h. selecting a new test device, the new test device located halfway up a loop segment between the previous test device and the last device;

- i. writing one or more test patterns to the new test device one or more times;
- j. if a write error is detected, selecting a new test device halfway down a loop segment between a prior previous test device and the previous test device;
- k. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and one of the prior previous test device and the last device;
- l. repeating i, j, and k until there are less than three devices in the loop segment being tested.
- m. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- n. if a write error is not detected, rounding up one from the new test device to identify the faulty link.

13. (Original) The method of claim 6, further comprising isolating a faulty device from the faulty link.

14. (Original) The method of claim 10, wherein said writing one or more test patterns to the new test device one or more times comprises writing one or more SCSI write buffer commands to the new test device one or more times.

15. (Original) The method of claim 12, wherein said writing one or more test patterns to the new test device one or more times comprises writing one or more SCSI write buffer commands to the new test device one or more times.

16. (Currently amended) A method of testing links in a network loop, comprising:
 sending a SCSI write buffer command to a last device in the network loop;
 sending one or more SCSI read buffer commands to the last device;
 determining whether the link between the last device and an initiator in the network loop is a faulty link;
 sending one or more SCSI write buffer commands to the last device;

~~performing divide and conquer tests to determine whether a loop segment~~
~~between the initiator and the last device includes at least one faulty link~~
selecting a first test device located in the loop between the initiator and the last
device, wherein the loop includes at least one other device between the
initiator and the first test device;
testing the first test device using one or more SCSI commands;
determining whether a faulty link lies between the initiator and the first test
device based on results of the testing of the first test device; and
repeating, until a faulty link has been isolated, the steps of (a) selecting a new test
device located in a portion of the loop in which the faulty link lies and (b)
testing the new test device using one or more SCSI commands.

17. (Currently amended) The method of claim 16, ~~further comprising isolating the at~~
~~least one faulty link in the loop segment~~ wherein said selecting the first test device
comprises accessing a counter in a fibre channel device.

18. (Currently amended) The method of claim ~~17~~ 16, wherein said ~~isolating the at~~
~~least one faulty link in the loop segment~~ repeating comprises:

~~selecting a first test device, the first test device located between the initiator and~~
~~the last device in the loop;~~

~~sending one or more SCSI write buffer commands to the new test device;~~

~~if a write error is detected in said testing the first test device,~~

- a. selecting a new test device, the new test device located between the initiator and the previous test device;
- b. sending one or more SCSI write buffer commands to the new test device;
- c. if a write error is detected, selecting a new test device between the initiator and the previous test device;
- d. repeating b and c until a write error is not detected;
- e. if a write error is not detected, selecting a new test device by incrementing the previous test device by one;

- f. sending one or more SCSI write buffer commands to the new test device; and
 - g. repeating e and f until a write error is detected;
- if a write error is not detected,
- h. selecting a new test device, the new test device located in a loop segment between the previous test device and the initiator;
 - i. sending one or more SCSI write buffer commands to the new test device;
 - j. if a write error is not detected, selecting a new test device between the previous test device and the last device;
 - k. repeating b and c until a write error is detected;
 - l. if a write error is detected, selecting a new test device by decrementing the previous test device by one;
 - m. sending one or more SCSI write buffer commands to the new test device; and
 - n. repeating l and m until a write error is not detected.

19. (Currently amended) The method of claim ~~17~~ 16, wherein said ~~isolating the at least one faulty link in the loop segment~~ repeating comprises:

~~selecting a first test device, the first test device located between the initiator and the last device in the loop;~~

~~sending one or more SCSI write buffer commands to the new test device;~~

if a write error is detected in said testing the first test device,

- a. selecting a new test device, the new test device located halfway down a loop segment between the initiator and the previous test device;
- b. sending one or more SCSI write buffer commands to the new test device; and
- c. if a write error is detected, selecting a new test device halfway down a loop segment between the previous test device and one of the initiator and a prior previous test device;

- d. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and the prior previous test device;
- e. repeating b, c, and d until there are less than three devices in the loop segment being tested;
- f. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- g. if a write error is not detected, rounding up one from the new test device to identify the faulty link;

if a write error is not detected,

- h. selecting a new test device, the new test device located halfway up a loop segment between the previous test device and the last device;
- i. sending one or more SCSI write buffer commands to the new test device; and
- j. if a write error is detected, selecting a new test device halfway down a loop segment between the prior previous test device and the previous test device;
- k. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and one of a prior previous test device and the last device;
- l. repeating i, j, and k until there are less than three devices in the loop segment being tested;
- m. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- n. if a write error is not detected, rounding up one from the new test device to identify the faulty link.

20. (Original) The method of claim 16, further comprising isolating a faulty device from the faulty link.

21. (Currently amended) A machine readable medium containing executable program instructions, which when executed on a digital processing system cause the digital processing system to perform a method comprising:

writing a test pattern to a last device in the loop and reading the test pattern from the last device in the loop one or more times;

determining whether a link between the last device and an initiator in the loop is a faulty link;

writing one or more test patterns to the last device one or more times; and ~~performing divide and conquer tests to determine whether a loop segment~~

~~between the initiator and the last device includes at least one faulty link~~

determining whether a loop segment between the initiator and the last device includes at least one faulty link; and

isolating the at least one faulty link in the loop segment;

wherein said isolating the at least one faulty link in the loop segment comprises:

selecting a first test device, the first test device located between the initiator and the last device in the loop;

writing one or more test patterns to the first test device one or more times;

if a write error is detected, isolating the faulty link in a loop segment between the initiator and the first test device; and

if a write error is not detected, isolating the faulty link in a loop segment between the first test device and the last device.

22. (Currently amended) The machine readable medium of claim 21, wherein said method further ~~comprising~~ comprises ~~isolating the at least one faulty link in the loop segment device.~~

23. (Currently amended) The machine readable medium of claim ~~22~~ 21, wherein said selecting the first test device comprises accessing a counter in a fibre channel device ~~isolating the at least one faulty link in the loop segment comprises:~~

~~selecting a first test device, the first test device located between the initiator and the last device in the loop;~~

~~writing one or more test patterns to the first test device one or more times;
if a write error is detected, isolating a faulty link in a loop segment between the
initiator and the first test device; and
if a write error is not detected, isolating a faulty link in a loop segment between
the first test device and the last device.~~

24. (Currently amended) The machine readable medium of claim ~~23~~ 21, wherein said isolating the faulty link in the loop segment between the initiator and the first test device comprises:

- a. selecting a new test device, the new test device located between the initiator and the previous test device;
- b. writing one or more test patterns to the new test device one or more times;
- c. if a write error is detected, selecting a new test device between the initiator and the previous test device;
- d. repeating b and c until a write error is not detected;
- e. if a write error is not detected, selecting a new test device by incrementing the previous test device by one;
- f. writing one or more test patterns to the new test device one or more times;
and
- g. repeating e and f until a write error is detected.

25. (Currently amended) The machine readable medium of claim ~~23~~ 21, wherein said isolating the faulty link in the segment between the first test device and the last device comprises:

- h. selecting a new test device, the new test device located in a loop segment between the previous test device and the last device;
- i. writing one or more test patterns to the new test device one or more times;
- j. if a write error is not detected, selecting a new test device between the previous test device and the last device;
- k. repeating b and c until a write error is detected;

- l. if a write error is detected, selecting a new test device by decrementing the previous test device by one;
- m. writing one or more test patterns to the new test device one or more times; and
- n. repeating l and m until a write error is not detected.

26. (Currently amended) The machine readable medium of claim ~~23~~ 21, wherein said isolating the faulty link in the loop segment between the initiator and the first device comprises:

- a. selecting a new test device, the new test device located halfway down a loop segment between the initiator and the previous test device;
- b. writing one or more test patterns to the new test device one or more times; and
- c. if a write error is detected, selecting a new test device halfway down a loop segment between the previous test device and one of the initiator and a prior previous test device;
- d. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and the prior previous test device;
- e. repeating b, c, and d until there are less than three devices in the loop segment being tested;
- f. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- g. if a write error is not detected, rounding up one from the new test device to identify the faulty link.

27. (Currently amended) The machine readable medium of claim ~~23~~ 21, wherein said isolating the faulty link in the loop segment between the first device and the last device comprises:

- h. selecting a new test device, the new test device located halfway up a loop segment between the previous test device and the last device;

- i. writing one or more test patterns to the new test device one or more times;
and
- j. if a write error is detected, selecting a new test device halfway down a loop segment between a prior previous test device and the previous test device;
- k. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and one of the prior previous test device and the last device; and
- l. repeating i, j, and k until there are less than three devices in the loop segment being tested.
- m. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- n. if a write error is not detected, rounding up one from the new test device to identify the faulty link.

28. (Currently amended) A machine readable medium containing executable program instructions, which when executed on a digital processing system cause the digital processing system to perform a method comprising:

sending a SCSI write buffer command to a last device in the network loop;
 sending one or more SCSI read buffer commands to the last device;
 determining whether the link between the last device and an initiator in the network loop is a faulty link;
 sending one or more SCSI write buffer commands to the last device; and
~~performing divide and conquer tests to determine whether a loop segment between the initiator and the last device includes at least one faulty link~~
selecting a first test device located in the loop between the initiator and the last device, wherein the loop includes at least one other device between the initiator and the first test device;
testing the first test device using one or more SCSI commands;
determining whether a faulty link lies between the initiator and the first test device based on results of the testing of the first test device;

repeating, until a faulty link has been isolated, the steps of (a) selecting a new test device located in a portion of the loop in which the faulty link lies and (b) testing the new test device using one or more SCSI commands.

29. (Currently amended) The machine readable medium of claim 28, wherein said method further ~~comprising~~ comprises isolating ~~the at least one faulty link in the loop segment~~ device.

30. (Currently amended) A system for isolating faulty links in a loop of network devices, including a last device and an initiator, comprising:

an interface to communicate with the loop of network devices;

a processing unit;

code executed by the processing unit to perform operations, the operations comprising:

(i) testing via the interface a link between the last device and the initiator in the loop;

(ii) testing via the interface the loop between the initiator and the last device; and

(iii) if a faulty link is identified between the initiator and the last device, ~~performing divide and conquer tests to identify a faulty loop segment and isolating the faulty link within the faulty loop segment~~

selecting a first device located in the loop between the initiator and the last device, wherein at least one other device is located between the initiator and the first device;

testing the first device via the interface;

determining whether the faulty link lies between the initiator and the first device based on results of the testing of the first device;

repeating, until the faulty link has been isolated, the steps of (a) selecting a new test device located in a portion of the loop

in which the faulty link lies and (b) testing the new test device via the interface.

31. (Currently amended) The system of claim 30, wherein the operations further comprise:

repeating, until the loop between the initiator and the last device passes the testing, the steps of:

testing via the interface the loop between the initiator and the last device; and
~~said testing the loop between the initiator and the last device, and said identifying the faulty loop segment, and said isolating the faulty link within the faulty loop segment until said testing the loop between the initiator and the last devices passes.~~

32. (Previously presented) The system of claim 30, wherein the operations further comprise:

identifying a faulty device.

33. (Previously presented) The system of claim 30, wherein said testing the link between the last device and the initiator in the loop comprises performing via the interface a SCSI write buffer command and one or more SCSI read buffer commands.

34. (Currently amended) The system of claim 30, wherein said testing the loop between the initiator and the last ~~devices~~ device comprises performing one or more SCSI write buffer commands via the interface.

35. (Currently amended) A system for testing links in a loop of network devices, including a last device and an initiator, comprising:

an interface to communicate with the loop of network devices;

a processing unit;

code executed by the processing unit to perform operations, the operations comprising ~~comprising~~:

- (i) writing via the interface a test pattern to a last device in the loop and reading the test pattern from the last device in the loop one or more times;
- (ii) determining whether a link between the last device and an initiator in the loop is a faulty link;
- (iii) writing one or more test patterns via the interface to the last device one or more times; and
- (iv) ~~performing divide and conquer tests to determine~~ determining whether a loop segment between the initiator and the last device includes at least one faulty link;
- (v) isolating the at least one faulty link in the loop segment; wherein said isolating comprises:
selecting a first test device, the first test device located between the initiator and the last device in the loop;
writing via the interface one or more test patterns to the first test device one or more times;
if a write error is detected, isolating the faulty link in a loop segment between the initiator and the first test device; and
if a write error is not detected, isolating the faulty link in a loop segment between the first test device and the last device.

36. (Currently amended) The system of claim 35, wherein said selecting the first test device comprises accessing a counter in a fibre channel device ~~the operations further comprise:~~

~~isolating the at least one faulty link in the loop segment.~~

37. (Currently amended) The system of claim ~~36~~ 35, wherein at least one test pattern of the one or more test patterns written via the interface to the first test device one or more times is a test pattern specified in a jitter specification standard ~~said isolating the at least one faulty link in the loop segment comprises:~~

~~selecting a first test device, the first test device located between the initiator and the last device in the loop;~~
~~writing via the interface one or more test patterns to the first test device one or more times;~~
~~if a write error is detected, isolating a faulty link in a loop segment between the initiator and the first test device; and~~
~~if a write error is not detected, isolating a faulty link in a loop segment between the first test device and the last device.~~

38. (Currently amended) The system of claim ~~37~~ 35, wherein said isolating the faulty link in the loop segment between the initiator and the first test device comprises:

- a. selecting a new test device, the new test device located between the initiator and the previous test device;
- b. writing via the interface one or more test patterns to the new test device one or more times;
- c. if a write error is detected, selecting a new test device between the initiator and the previous test device;
- d. repeating b and c until a write error is not detected;
- e. if a write error is not detected, selecting a new test device by incrementing the previous test device by one;
- f. writing via the interface one or more test patterns to the new test device one or more times; and
- g. repeating e and f until a write error is detected.

39. (Currently amended) The system of claim ~~37~~ 35, wherein said isolating the faulty link in the segment between the first test device and the last device comprises:

- h. selecting a new test device, the new test device located in a loop segment between the previous test device and the last device;
- i. writing via the interface one or more test patterns to the new test device one or more times;

- j. if a write error is not detected, selecting a new test device between the previous test device and the last device;
- k. repeating b and c until a write error is detected;
- l. if a write error is detected, selecting a new test device by decrementing the previous test device by one;
- m. writing one or more test patterns to the new test device one or more times; and
- n. repeating l and m until a write error is not detected.

40. (Currently amended) The system of claim ~~37~~ 35, wherein said isolating the faulty link in the loop segment between the initiator and the first test device comprises:

- a. selecting a new test device, the new test device located halfway down a loop segment between the initiator and the previous test device;
- b. writing via the interface one or more test patterns to the new test device one or more times;
- c. if a write error is detected, selecting a new test device halfway down a loop segment between the previous test device and one of the initiator and a prior previous test device;
- d. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and the prior previous test device;
- e. repeating b, c, and d until there are less than three devices in the loop segment being tested;
- f. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- g. if a write error is not detected, rounding up one from the new test device to identify the faulty link.

41. (Currently amended) The system of claim ~~37~~ 35, wherein said isolating the faulty link in the loop segment between the first test device and the last device comprises:

- h. selecting a new test device, the new test device located halfway up a loop segment between the previous test device and the last device;
- i. writing via the interface one or more test patterns to the new test device one or more times;
- j. if a write error is detected, selecting a new test device halfway down a loop segment between a prior previous test device and the previous test device;
- k. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and one of the prior previous test device and the last device;
- l. repeating i, j, and k until there are less than three devices in the loop segment being tested.
- m. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- n. if a write error is not detected, rounding up one from the new test device to identify the faulty link.

42. (Previously presented) The system of claim 35, wherein the operations further comprise:

isolating a faulty device from the faulty link.

43. (Previously presented) The system of claim 39, wherein said writing one or more test patterns to the new test device one or more times comprises writing one or more SCSI write buffer commands to the new test device one or more times.

44. (Previously presented) The system of claim 41, wherein said writing one or more test patterns to the new test device one or more times comprises writing one or more SCSI write buffer commands to the new test device one or more times.

45. (Currently amended) A system for testing links in a loop of network devices, including a last device and an initiator, comprising:

an interface to communicate with the loop of network devices;
a processing unit;
code executed by the processing unit to perform operations, the operations comprising:

- (i) sending a SCSI write buffer command via the interface to a last device in the network loop;
- (ii) sending one or more SCSI read buffer commands via the interface to the last device;
- (iii) determining whether the link between the last device and an initiator in the network loop is a faulty link;
- (iv) sending one or more SCSI write buffer commands via the interface to the last device; and
- (v) ~~performing divide and conquer tests to determine whether a loop segment between the initiator and the last device includes at least one faulty link,~~ selecting a first test device located in the loop between the initiator and the last device, wherein the loop includes at least one other device between the initiator and the first test device;
- (vi) testing the first test device using one or more SCSI commands via the interface;
- (vii) determining whether a faulty link lies between the initiator and the first test device based on results of the testing of the first test device; and
- (viii) repeating, until a faulty link has been isolated, the steps of (a) selecting a new test device located in a portion of the loop in which the faulty link lies and (b) testing the new test device using one or more SCSI commands via the interface.

46. (Currently amended) The system of claim 45, wherein said selecting the first test device comprises accessing a counter in a fibre channel device ~~the operations further comprise:~~

~~isolating the at least one faulty link in the loop segment.~~

47. (Currently amended) The system of claim 46 ~~45~~, wherein said ~~isolating the at least one faulty link in the loop segment~~ repeating comprises:

~~selecting a first test device, the first test device located between the initiator and the last device in the loop;~~

~~sending via the interface one or more SCSI write buffer commands to the new test device;~~

if a write error is detected in testing the first test device,

- a. selecting a new test device, the new test device located between the initiator and the previous test device;
- b. sending via the interface one or more SCSI write buffer commands to the new test device;
- c. if a write error is detected, selecting a new test device between the initiator and the previous test device;
- d. repeating b and c until a write error is not detected;
- e. if a write error is not detected, selecting a new test device by incrementing the previous test device by one;
- f. sending via the interface one or more SCSI write buffer commands to the new test device; and
- g. repeating e and f until a write error is detected;

if a write error is not detected,

- h. selecting a new test device, the new test device located in a loop segment between the previous test device and the initiator;
- i. sending via the interface one or more SCSI write buffer commands to the new test device;
- j. if a write error is not detected, selecting a new test device between the previous test device and the last device;
- k. repeating b and c until a write error is detected;
- l. if a write error is detected, selecting a new test device by decrementing the previous test device by one;

- m. sending via the interface one or more SCSI write buffer commands to the new test device; and
- n. repeating l and m until a write error is not detected.

48. (Currently amended) The system of claim 46 ~~45~~, wherein said ~~isolating the at least one faulty link in the loop segment~~ repeating comprises:

~~selecting a first test device, the first test device located between the initiator and the last device in the loop;~~

~~sending via the interface one or more SCSI write buffer commands to the new test device;~~

if a write error is detected in testing the first test device,

- a. selecting a new test device, the new test device located halfway down a loop segment between the initiator and the previous test device;
- b. sending via the interface one or more SCSI write buffer commands to the new test device; and
- c. if a write error is detected, selecting a new test device halfway down a loop segment between the previous test device and one of the initiator and a prior previous test device;
- d. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and the prior previous test device;
- e. repeating b, c, and d until there are less than three devices in the loop segment being tested;
- f. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- g. if a write error is not detected, rounding up one from the new test device to identify the faulty link;

if a write error is not detected,

- h. selecting a new test device, the new test device located halfway up a loop segment between the previous test device and the last device;
- i. sending via the interface one or more SCSI write buffer commands to the new test device; and
- j. if a write error is detected, selecting a new test device halfway down a loop segment between the prior previous test device and the previous test device;
- k. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and one of a prior previous test device and the last device;
- l. repeating i, j, and k until there are less than three devices in the loop segment being tested;
- m. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- n. if a write error is not detected, rounding up one from the new test device to identify the faulty link.

49. (Previously presented) The system of claim 45, wherein the operations further comprise:

isolating a faulty device from the faulty link.

50. (Canceled)

51. (Previously presented) A method of testing links in a network loop, comprising:

sending a SCSI write buffer command to a last device in the network loop;
 sending one or more SCSI read buffer commands to the last device;
 determining whether the link between the last device and an initiator in the network loop is a faulty link;
 sending one or more SCSI write buffer commands to the last device;

determining whether a loop segment between the initiator and the last device includes at least one faulty link; and

isolating the at least one faulty link in the loop segment;

wherein said isolating the at least one faulty link in the loop segment comprises:

selecting a first test device, the first test device located between the initiator and the last device in the loop;

sending one or more SCSI write buffer commands to the new test device;

if a write error is detected,

- a. selecting a new test device, the new test device located between the initiator and the previous test device;
- b. sending one or more SCSI write buffer commands to the new test device;
- c. if a write error is detected, selecting a new test device between the initiator and the previous test device;
- d. repeating b and c until a write error is not detected;
- e. if a write error is not detected, selecting a new test device by incrementing the previous test device by one;
- f. sending one or more SCSI write buffer commands to the new test device; and
- g. repeating e and f until a write error is detected;

if a write error is not detected,

- h. selecting a new test device, the new test device located in a loop segment between the previous test device and the initiator;
- i. sending one or more SCSI write buffer commands to the new test device;
- j. if a write error is not detected, selecting a new test device between the previous test device and the last device;
- k. repeating b and c until a write error is detected;
- l. if a write error is detected, selecting a new test device by decrementing the previous test device by one;

- m. sending one or more SCSI write buffer commands to the new test device; and
- n. repeating l and m until a write error is not detected.

52. (Previously presented) A method of testing links in a network loop, comprising:
- sending a SCSI write buffer command to a last device in the network loop;
 - sending one or more SCSI read buffer commands to the last device;
 - determining whether the link between the last device and an initiator in the network loop is a faulty link;
 - sending one or more SCSI write buffer commands to the last device;
 - determining whether a loop segment between the initiator and the last device includes at least one faulty link; and
 - isolating the at least one faulty link in the loop segment;
- wherein said isolating the at least one faulty link in the loop segment comprises:
- selecting a first test device, the first test device located between the initiator and the last device in the loop;
 - sending one or more SCSI write buffer commands to the new test device;
 - if a write error is detected,
 - a. selecting a new test device, the new test device located halfway down a loop segment between the initiator and the previous test device;
 - b. sending one or more SCSI write buffer commands to the new test device; and
 - c. if a write error is detected, selecting a new test device halfway down a loop segment between the previous test device and one of the initiator and a prior previous test device;
 - d. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and the prior previous test device;
 - e. repeating b, c, and d until there are less than three devices in the loop segment being tested;

- f. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
 - g. if a write error is not detected, rounding up one from the new test device to identify the faulty link;
- if a write error is not detected,
- h. selecting a new test device, the new test device located halfway up a loop segment between the previous test device and the last device;
 - i. sending one or more SCSI write buffer commands to the new test device; and
 - j. if a write error is detected, selecting a new test device halfway down a loop segment between the prior previous test device and the previous test device;
 - k. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and one of a prior previous test device and the last device;
 - l. repeating i, j, and k until there are less than three devices in the loop segment being tested;
 - m. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
 - n. if a write error is not detected, rounding up one from the new test device to identify the faulty link.

53 - 54. (Canceled)

55. (Previously presented) A system for testing links in a loop of network devices, including a last device and an initiator, comprising:

- an interface to communicate with the loop of network devices;
- a processing unit;
- code executed by the processing unit to perform operations, the operations comprising:

- (i) sending a SCSI write buffer command via the interface to a last device in the network loop;
- (ii) sending one or more SCSI read buffer commands via the interface to the last device;
- (iii) determining whether the link between the last device and an initiator in the network loop is a faulty link;
- (iv) sending one or more SCSI write buffer commands via the interface to the last device;
- (v) determining whether a loop segment between the initiator and the last device includes at least one faulty link; and
- (vi) isolating the at least one faulty link in the loop segment;

wherein said isolating the at least one faulty link in the loop segment comprises:

selecting a first test device, the first test device located between the initiator and the last device in the loop;

sending via the interface one or more SCSI write buffer commands to the new test device;

if a write error is detected,

- a. selecting a new test device, the new test device located between the initiator and the previous test device;
- b. sending via the interface one or more SCSI write buffer commands to the new test device;
- c. if a write error is detected, selecting a new test device between the initiator and the previous test device;
- d. repeating b and c until a write error is not detected;
- e. if a write error is not detected, selecting a new test device by incrementing the previous test device by one;
- f. sending via the interface one or more SCSI write buffer commands to the new test device; and
- g. repeating e and f until a write error is detected;

if a write error is not detected,

- h. selecting a new test device, the new test device located in a loop segment between the previous test device and the initiator;
- i. sending via the interface one or more SCSI write buffer commands to the new test device;
- j. if a write error is not detected, selecting a new test device between the previous test device and the last device;
- k. repeating b and c until a write error is detected;
- l. if a write error is detected, selecting a new test device by decrementing the previous test device by one;
- m. sending via the interface one or more SCSI write buffer commands to the new test device; and
- n. repeating l and m until a write error is not detected.

56. (Previously presented) A system for testing links in a loop of network devices, including a last device and an initiator, comprising:

an interface to communicate with the loop of network devices;

a processing unit;

code executed by the processing unit to perform operations, the operations comprising:

- (i) sending a SCSI write buffer command via the interface to a last device in the network loop;
- (ii) sending one or more SCSI read buffer commands via the interface to the last device;
- (iii) determining whether the link between the last device and an initiator in the network loop is a faulty link;
- (iv) sending one or more SCSI write buffer commands via the interface to the last device;
- (v) determining whether a loop segment between the initiator and the last device includes at least one faulty link; and
- (vi) isolating the at least one faulty link in the loop segment;

wherein said isolating the at least one faulty link in the loop segment comprises:

selecting a first test device, the first test device located between the initiator and the last device in the loop;

sending via the interface one or more SCSI write buffer commands to the new test device;

if a write error is detected,

- a. selecting a new test device, the new test device located halfway down a loop segment between the initiator and the previous test device;
- b. sending via the interface one or more SCSI write buffer commands to the new test device; and
- c. if a write error is detected, selecting a new test device halfway down a loop segment between the previous test device and one of the initiator and a prior previous test device;
- d. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and the prior previous test device;
- e. repeating b, c, and d until there are less than three devices in the loop segment being tested;
- f. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- g. if a write error is not detected, rounding up one from the new test device to identify the faulty link;

if a write error is not detected,

- h. selecting a new test device, the new test device located halfway up a loop segment between the previous test device and the last device;
- i. sending via the interface one or more SCSI write buffer commands to the new test device; and

- j. if a write error is detected, selecting a new test device halfway down a loop segment between the prior previous test device and the previous test device;
- k. if a write error is not detected, selecting a new test device halfway up a loop segment between the previous test device and one of a prior previous test device and the last device;
- l. repeating i, j, and k until there are less than three devices in the loop segment being tested;
- m. if a write error is detected, rounding down one from the new test device to identify the faulty link; and
- n. if a write error is not detected, rounding up one from the new test device to identify the faulty link.